CLAIMS

What is claimed is:

1.   At a station of a contention-based WLAN system in which the station is adapted to operate in awake and doze states, a method comprising:

5      (A) with the station in the doze state, transitioning the station from the doze state to the awake state; and

(B) transmitting to an access point (AP) of the system a first frame, wherein a designated bit in the first frame informs the AP that the station will remain in the awake state and be available to receive at least one transmission from the AP.

10

2.   The method of claim 1, wherein the contention-based WLAN system conforms to an IEEE 802.11 standard.

3.   The method of claim 1, wherein the contention-based WLAN system conforms to

15    an extension of an IEEE 802.11 standard.

4.   The method of claim 1, wherein steps (A) and (B) are performed independent of any beacon schedule for the system.

20    5.   The method of claim 1, further comprising receiving from the AP an acknowledgement frame corresponding to the first frame.

6.   The method of claim 5, wherein a designated bit in the acknowledgement frame informs the station whether the AP has data to transmit to the station.

25

7.   The method of claim 1, wherein:

when data is available for transmission from the station to the AP, the first frame corresponds to the data; and

when there is no data available for transmission from the station to the AP, the first

30    frame is a null frame.

8.   The method of claim 1, wherein:

step (A) comprises:

starting a timer; and

when there is no data available for transmission from the station to the AP, transitioning the station from the doze state to the awake state after the timer reaches a threshold value; and

5     for step (B), the first frame is a null frame.

9. The method of claim 8, wherein the threshold value is less than an inter-beacon time interval.

10     10. The method of claim 1, wherein the designated bit is a power management bit of an IEEE 802.11 standard.

11. The method of claim 1, wherein the designated bit is a more data bit of an IEEE 802.11 standard.

15

12. The method of claim 1, further comprising:

(C) with the station in the awake state and the AP informed that the station is in the awake state, transmitting to the AP a closing frame, wherein a designated bit in the closing frame informs the AP that the station will transition to the doze state; and .

20     (D) transitioning the station from the awake state to the doze state.

13. At an access point (AP) of a contention-based WLAN system in which a station is adapted to operate in awake and doze states, a method comprising:

(A) receiving from the station a first frame, wherein a designated bit in the first frame

25     informs the AP that the station will remain in the awake state and be available to receive at least one transmission from the AP; and

(B) transmitting to the station an acknowledgement frame corresponding to the first frame, wherein a designated bit in the acknowledgement frame informs the station whether the AP has data to transmit to the station.

30

14. The method of claim 13, wherein the contention-based WLAN system conforms to an extension of an IEEE 802.11 standard.

15. The method of claim 14, wherein the designated bit is a more data bit of the IEEE 802.11 standard.

16. The method of claim 13, wherein steps (A) and (B) are performed independent of

5    any beacon schedule for the system.

17. The method of claim 13, wherein:

when data is available for transmission from the station to the AP, the first frame corresponds to the data; and

10    when there is no data available for transmission from the station to the AP, the first frame is a null frame.

18. A station in a contention-based WLAN system, the station adapted to operate in awake and doze states and comprising:

15    (A) a processor, wherein, with the station in the doze state, the processor configures the station to transition from the doze state to the awake state; and

(B) a transceiver, wherein the processor configures the transceiver to transmit to an access point (AP) of the system a first frame, wherein a designated bit in the first frame informs the AP that the station will remain in the awake state and be available to receive

20    at least one transmission from the AP.

19. A contention-based WLAN system, comprising an access point (AP) and a ⋅ station, wherein:

the station is adapted to operate in awake and doze states; and

25    the station comprises:

(A)    a processor, wherein, with the station in the doze state, the processor configures the station to transition from the doze state to the awake state; and        ⋅

(B)a transceiver, wherein the processor configures the transceiver to transmit to the AP a first frame, wherein a designated bit in the first frame informs the AP that the

30    station will remain in the awake state and be available to receive at least one transmission from the AP.

20. An access point (AP) of a contention-based WLAN system in which a station is

adapted to operate in awake and doze states, the AP comprising a processor and a transceiver, wherein the processor configures the transceiver:

(A) to receive from the station a first frame, wherein a designated bit in the first frame informs the AP that the station will remain in the awake state and be available to receive

5       at least one transmission from the AP; and

(B) to transmit to the station an acknowledgement frame corresponding to the first frame, wherein a designated bit in the acknowledgement frame informs the station whether the AP has data to transmit to the station.

10      21. A contention-based WLAN system, comprising an access point (AP) and a station, wherein:

the station is adapted to operate in awake and doze states; and

the AP comprises a processor and a transceiver, wherein the processor configures the transceiver:

15      (A)     to receive from the station a first frame, wherein a designated bit in the first frame informs the AP that the station will remain in the awake state and be available to receive at least one transmission from the AP; and

(B) to transmit to the station an acknowledgement frame corresponding to the first frame, wherein a designated bit in the acknowledgement frame informs the station

20      whether the AP has data to transmit to the station.